

Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed**1.1. Name of the Data, data collection Project, or data-producing Program:**

2010 USFS Lidar DEM: Malheur National Forest (LC West), OR

1.2. Summary description of the data:

No metadata record was provided for this data set. This record was created by the NOAA Office for Coastal Management (OCM) using information from the Aero-Graphics, Inc, Lidar Data Collection report. A link to this report is provided in the URL section of this metadata record.

This GIS dataset contains Bare Earth (BE) raster grids depicting lidar-derived elevation data for USDA Forest Service Malheur National Forest (LC West) project area. The BE raster dataset encompasses 206,724 acres (323 square miles) within Grant County in Oregon. The nominal pulse density is nine points per square meter. The bare earth (BE) digital elevation model (DEM) raster grid cell size is 1 meter. The native projection was UTM Zone 11, units are in meters. The native horizontal datum is NAD83 and the native vertical datum is NAVD88 (Geoid03). Aero-Graphics, Inc. collected the lidar and created this data set.

In addition to these bare earth Digital Elevation Model (DEM) data, the lidar point data that these DEM data were created from, are also available. These data are available for download at the link provided in the URL section of this metadata record.

1.3. Is this a one-time data collection, or an ongoing series of measurements?

One-time data collection

1.4. Actual or planned temporal coverage of the data:

2010-07-27 to 2010-08-19

1.5. Actual or planned geographic coverage of the data:

W: -119.351152, E: -118.594384, N: 44.810496, S: 44.488214

1.6. Type(s) of data:

(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Model (digital)

1.7. Data collection method(s):

(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:**1.8.1. If data are from another observing system, please specify:****2. Point of Contact for this Data Management Plan (author or maintainer)****2.1. Name:**

NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:

Metadata Contact

2.3. Affiliation or facility:

NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:

coastal.info@noaa.gov

2.5. Phone number:

(843) 740-1202

3. Responsible Party for Data Management

Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:**3.2. Title:**

Data Steward

4. Resources

Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?**4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):****5. Data Lineage and Quality**

NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible

(describe or provide URL of description):

Process Steps:

- 2010-01-01 00:00:00 - Airborne Acquisition – Equipment and Methodology LiDAR acquisition of LC West was performed with an Optech ALTM Orion sensor. Aero-Graphics flew at an average altitude of 3280 ft AGL (above ground level) and made appropriate adjustments to compensate for topographic relief. The PRF (pulse rate frequency) used for collection was 100 kHz, scan frequency of 70 Hz, and scan angle of +/- 11° from the nadir position (full scan angle 22°). The ALTM Orion features roll compensation that adjusts the mirror to maintain the full scan angle integrity in relation to nadir, even when less than perfect weather conditions push the sensor off nadir. Acquisition was performed with a 50% side lap and yielded >12.5 points per square meter throughout the project boundary. The Optech ALTM Orion is capable of receiving up to four range measurements, including 1st, 2nd, 3rd, and last returns for every pulse sent from the system. The ALTM Orion is also equipped with a GPS/IMU unit that continually records the XYZ position and roll, pitch and yaw attitude of the plane throughout the flight. This information allows us to correct laser return data positions that may have been thrown off by the plane's natural movement. The ALTM Orion LiDAR sensor is equipped with ALTM-Nav Flight Management System Software. ALTM-Nav is not only used to guide the airborne mission in flight, but our office flight planning is performed using a combination of Nav and traditional flight planning practices. The smooth transition from flight planning to aerial operations eliminates discrepancies between the flight plan and what is actually acquired. The use of ALTM-Nav helps ensure an accurate and consistent acquisition mission with real-time quality assurance while still airborne. The system operator can monitor the point density and swath during the mission to confirm adequate coverage within the area of interest
- Ground Survey – Equipment and Methodology Aero-Graphics used survey data to differentially correct the aircraft's trajectory data and to ensure that the LiDAR data maintained its true geographic integrity. Using our own static base stations at strategic points in the project area, with data collected during the time of the LiDAR mission, we used Multi-Base processing in Applanix's POS GNSS software to accurately correct the aircraft's real-time GPS trajectory.
- LiDAR Processing Workflow and Software a. Absolute Sensor Calibration. The absolute sensor calibration is defined as the difference in roll, pitch, heading, and scale between the raw laser point cloud from the sensor and surveyed control points on the ground over two separate sites. Software: Dashmap 4.1801; ACalib 1.3.5.7. b. Kinematic Air Point Processing. Differentially corrected the 1-second airborne GPS positions with ground base stations; combined and refined the GPS positions with 1/200-second IMU (roll-pitch-yaw) data through development of a smoothed best estimate of trajectory (SBET). Software: Applanix POSpac 5.3.3664.

28463. c. Raw LiDAR Point Processing. Combined SBET with raw LiDAR range data; solved real-world position for each laser point; produced point cloud data by flight strip in ASPRS v1.1 .LAS format; output in WGS84 UTM Ellipsoid Heights. Software: LiDAR Mapping Suite 1.0. d. Relative Calibration. Tested relative accuracy; performed relative calibration by correcting for roll, pitch, heading, and scale discrepancies between adjacent flightlines. Results presented in Section 4.1. Software: LiDAR Mapping Suite 1.0. e. Tiling & Long/Short Filtering. Cut data into project-specified tiles and filtered out grossly long and short returns. Software: TerraScan 10.011. f. Classification. Ran classification algorithms on points in each tile; separated into ground, unclassified, high outliers and low outliers; revisited areas not completely classified automatically and manually corrected them. Software: TerraScan 10.011. g. Absolute Accuracy Assessment. Performed comparative tests that showed Z-differences between each static survey point and the laser point surface. Results presented in Section 4.2. Software: TerraScan 10.001. h. Datum Transformation. Transformed all .LAS tiles from WGS84 UTM 11N Ellipsoid Heights into NAD83 UTM 11N, adjusted for orthometric heights on NAVD88 (Geoid03). Integrity of the .LAS file format was maintained throughout the process. Software: Blue Marble Desktop 2.1. i. DEM Creation. Generated 2-meter first-return DEMs and 1-meter ground surface DEMs in ESRI Raster Grid format, tiled according to project specifications. Software: TerraScan 10.011. j. Intensity Image Creation. Generated 1-meter pixel intensity images in GeoTIFF format, tiled according to project specifications. Software: TerraScan 10.011.

- 2020-03-02 00:00:00 - The NOAA Office for Coastal Management (OCM) received 57 raster DEM files in ESRI ArcGrid format from DOGAMI. The data were in UTM Zone 11, NAD83, meters coordinates and NAVD88 (Geoid03) elevations in meters. The bare earth raster files were at a 1 m grid spacing. No metadata record was provided for this data set. This record was created by the NOAA Office for Coastal Management (OCM) using information from the Aero-Graphics, Inc., Lidar Data Collection report. OCM performed the following processing on the data for Digital Coast storage and provisioning purposes: 1. Used internal script to assign the vertical EPSG code (5703) and convert to GeoTiff format. 2. Copied to the files to https.

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

6. Data Documentation

The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?

No

6.1.1. If metadata are non-existent or non-compliant, please explain:

Missing/invalid information:

- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

6.2. Name of organization or facility providing metadata hosting:

NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:**6.3. URL of metadata folder or data catalog, if known:**

<https://www.fisheries.noaa.gov/inport/item/58959>

6.4. Process for producing and maintaining metadata

(describe or provide URL of description):

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access

NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:

NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:

<https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=9039>

https://coast.noaa.gov/htdata/raster2/elevation/OLC_Malheur_LCWest_2010_9039

7.3. Data access methods or services offered:

Data is available online for bulk and custom downloads.

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection

The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:

(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):

Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection

9. Additional Line Office or Staff Office Questions

Line and Staff Offices may extend this template by inserting additional questions in this section.